Name: _____

Introduction to Kinetic and Potential Energy – Answer Key

Step 1: Read article and answer questions

1. Gravitational potential energy is the stored energy due to the mass and height of an object.

2. Cart D has most gravitational potential energy compared to the other carts. This is because a roller coaster cart has the most potential energy when it is higher up and when there are more people in it. Cart A has the least gravitational potential energy compared to the other carts. This is because a roller coaster cart has less potential energy when it is lower and has fewer people in it.

3. Kinetic energy is the energy of motion due to the mass and the speed of an object. A roller coaster has the most kinetic energy when it is going fast and there are more people in it.

4. False, BOTH the mass and the height affect the potential energy of an object.

5. It needs a starting hill that is higher than the second hill so that it has enough energy to make it over the second hill.

Step 2: Help a Theme Park

1. No, the cart starts on a low hill and will start with low potential energy. It won't have enough energy to get over the high hill.

2. No, the cart starts on a low hill and will start with low potential energy. It won't have enough energy to get around the higher loops.

3. Yes, the cart starts on a high hill with a high potential energy. I will have enough energy to get over the lower hills.

4. No, the cart starts on a hill that is the same as all of the other hills. It will have just enough energy to get to the top of the next hill, but it won't make it over the hill. In addition, there is friction, so it won't quite make it to the top of the next hill.

Step 3: Design your own ride

Answers will vary. The starting point has to be higher than any of the other hills or loops. Since some energy is lost to friction along the way, there is less energy as the cart races through the ride. This means that the hills and loops can't be super high near the end of the ride when the cart is running out of energy.